

## **8. Constraints and Assumptions**

### **8.1 Constraints**

**Timeline:** The project will be implemented within 3 months, so the scope of functionality will focus on core features: face data registration, automatic attendance, and attendance reporting.

#### **Tools and Technologies:**

**Back-end:** Node.js for logic processing and APIs.

**Front-end:** HTML, CSS, JavaScript for the user interface.

**Database:** MongoDB Atlas to store facial data and attendance information.

**Devices:** Each student is required to use a smartphone with a front-facing camera to capture and upload their facial image to the system.

**Data:** The initial facial dataset is collected directly from students' smartphone cameras; the quality depends on the camera resolution and lighting conditions.

**Human Resources:** The development team consists of IT students with limited experience, so a simple and feasible facial recognition solution needs to be selected.

**Cost:** The system leverages open-source technologies and free cloud services (MongoDB Atlas free tier) to minimize development costs.

### **8.2 Assumptions**

Students and lecturers both have stable internet connections when using the system.

Each student owns a smartphone with a front-facing camera capable of capturing clear images.

Students cooperate in capturing and providing accurate facial images for account registration.

Users have basic skills in using web/apps to log in and perform attendance actions.

The server is capable of handling multiple image upload requests simultaneously during class hours.

## **9. Target Users / Stakeholders**

### **9.1 Target Users**

#### **Students (18–25 years old):**

Use their personal smartphones to check in anytime, anywhere.

Can quickly review their attendance history.

#### **Lecturers (25–50 years old):**

No longer need to spend time calling names; the system automatically compiles the attendance list from students.

Receive fast and accurate reports immediately after the class session.

#### **University/Training Department:**

Collects and manages attendance data centrally.

Reduces fraud since each student must authenticate with their own facial recognition.

### **9.2 Stakeholders**

**End Users:** Students (perform attendance via smartphones) and lecturers (manage classes).

**Training Department/Management Board:** Monitor attendance data, generate statistical reports, and integrate with the academic management system.

**Development Team:** Students carrying out the project, responsible for developing and testing the system.

**University Technical Department:** Support installation, deployment, and operation of the system in real-world application.

### **9.3 Advantages**

**Students:** Take attendance proactively via smartphones; convenient, transparent, and easy to track their learning history.

**Lecturers:** Reduce the burden of manual attendance; receive automatic reports after each class session.

**University:** Centrally manage data in a modern and transparent way, minimizing fraudulent attendance.